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«MILLER'S PYRAMID», THE «ONION MODEL», THE «PORTFOLIO METHOD», THE «ASSESSMENT ORBITS»: HOW TO EVALUATE THE PROFESSIONALITY OF A DOCTOR?

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Анотація: *Стаття присвячена питанню оцінювання професійності лікаря. Розглянуто різні концепції, які пропонуються фахівцями в галузі медичної педагогіки для розв'язання цього завдання – «піраміду Міллера», «модель цибулини», «метод портфоліо», «орбіти оцінювання». Значну увагу приділено модифікації «піраміди Міллера», що зумовлено зміщенням у медичній освіті акцентів на розвиток професійності і формування професійної ідентичності. Проаналізовано погляди вчених, які вважають, що додавання до класичної чотиристратумної структури «піраміди Міллера» п'ятого стратуму послідовно демонструє ставлення, цінності та поведінку, які очкують від того, хто почав думати, діяти і відчувати себе лікарем. Коротко розглянуто «модель цибулини». Приділено увагу методу портфоліо як процесу організації, форми та технології роботи, що уможливлює безперервне оцінювання досягнення суб'єктів медичної освіти. Схарактеризовано «орбіти оцінювання».*

Ключові слова: *медична освіта, лікар, професійність, «піраміда Міллера», «модель цибулини», «метод портфоліо», «орбіти оцінювання».*

Abstract. *The article focuses on the issue of assessing a doctor's professionalism, exploring various methodologies proposed by experts in medical pedagogy. Concepts such as "Miller's pyramid," the "onion model," and the "portfolio method", «assessment orbits» are thoroughly examined. Particularly highlighted is the adaptation of "Miller's pyramid" in response to the evolving focus of medical education towards fostering professionalism and shaping professional identity. The article scrutinizes perspectives advocating for the incorporation of a fifth tier into the traditional four-tier structure of "Miller's pyramid," emphasizing the attitudes, values, and behaviors indicative of a doctor's emerging professional ethos. Additionally, a succinct overview of the "onion model" is provided. The portfolio method is emphasized for its role in organizing, shaping, and facilitating continuous assessment of the educational accomplishments of medical students. The «assessment orbits» are characterized.*

Key words: *medical education, doctor, professionalism, «Miller's pyramid», «the onion model», «the portfolio method», «assessment orbits».*

Introduction.

For over two millennia, society and doctors have used the word «professional» to describe medical practitioners. Doctors were expected to behave professionally, but professionalism was not taught. Since the last decades of the XX century, the issue of the need to teach professionalism and its assessment has become acute.

The aim of the study.

To analyze the concepts proposed by experts in the field of medical pedagogy for evaluating the professionalism of a doctor.

Main part.

In the September supplement of Volume 65, Number 9 of the esteemed journal «Academic Medicine» for 1990, an article by one of the most renowned American specialists in medical education, George Edward Miller (1919-1998), titled «The Assessment of Clinical Skills/ Competence/Performance» was published. This article has since become iconic in medical pedagogy, captivating the attention of researchers in medical education for nearly 35 years.

Miller noted that the relevance of his work was determined by the fact that testing and evaluating the knowledge of future doctors through testing, which was (and currently remains one of the most common methods) an integral and almost the main component of education in medical universities/schools, certainly important and useful, but testing is a tool that is far from perfect and somewhat limited if «...if we really believe there is more to the practice of medicine than knowing. To fulfill that broader objective, graduates must also know how to use the knowledge they have accumulated, for otherwise they may be little more than «idiot savants». They must develop, among other things, the skill of acquiring information from a variety of human and laboratory sources, to analyze and interpret these data, and finally to translate such findings into a rational diagnosis or management plan. It is this quality of being functionally adequate, or of having sufficient knowledge, judgment, skill, or strength for a particular duty that Webster defines as competence [1]».

For the convenience of demonstrating his own reasoning, Miller proposed a pyramid, which is now widely known in educational medical discourse as Miller's pyramid and which was stratified into «KNOWS»/«Knowledge», «KNOWS HOW»/«Competence», «SHOWS HOW»/«Performance», «DOES»/ «Action» [1]. This pyramid was aimed at evaluating, respectively, the knowledge, competence, efficiency, actions of the doctor, in fact, the evaluation of the expected results of education and training [2].

Since its appearance, Miller's pyramid has served as a benchmark for evaluating knowledge, and it is also widely used for evaluating professionalism [3]. Attempts have been made repeatedly to modify the pyramid: «segmented pyramid» – indicates that no one level is dominant in relation to another in matters of quality, reliability and truth; all levels complement each other; «inverted pyramid» – shows the growing importance of workplace assessment; «nested model» – displays the «nesting» of lower levels into higher ones; «suspended attic» – alerts assessors to the possibility of skill acquisition sometimes in the absence of a supportive cognitive base [4].

In the domestic scientific discourse, Miller's pyramid is considered in detail by the well-known researchers Voronenko and Mintser [5], who note that the first-level evaluation («knows») is aimed at confirming that the doctor has acquired the knowledge necessary to perform professional duties, and the evaluation tool serves as a test.

Scientists emphasize that a successful certification at this level cannot reflect the real readiness of the future doctor for professional activity. The second stratum («knows how») – the «level of cognitive skills» – serves to confirm that the doctor can apply existing knowledge to solve clinical tasks. A wider arsenal of tools is used to assess this level – multiple-choice test tasks, clinical situational tasks, an interview, etc. Demonstration of readiness to perform professional duties as a doctor is the third stratum of the pyramid – «shows how» [5]. Voronenko and Mintser focus on the fact that "successful performance of test and written tasks is not direct evidence of how a doctor will act in real clinical practice, therefore this stratum is connected with the verification of practical skills, skills and competencies acquired during training, which are evaluated «under simulation conditions» [5]. For this purpose, in most countries of the world, an objective structured clinical examination is used to assess the fourth stratum. Finally, the top of the pyramid – «does» – characterizes independent independent practice in real clinical conditions [5].

The shift of emphasis in medical education to the formation of professional identity has put on the agenda the question of the relevance of the stratum «does» as the top of the pyramid, because now a more reliable indicator of professionalism is the inclusion of professional values and attitudes in the structures of the doctor's personality [3].

In view of the above, Canadian scientists Cruess, Cruess & Steinert suggested adding one more to the classic four-stratum pyramid – the fifth stratum, which will become the new top of the pyramid. Actually, we are talking about a stratum that reflects professional identity and is called «is» [3]. The authors believe that this stratum consistently demonstrates the attitudes, values, and behaviors that are expected of someone who has begun to think, act, and feel like a doctor. To evaluate this stratum, currently available methods of assessing the progress of future doctors to professional identity should be used, which are described in detail by the cited researchers [3].

We agree with Fitzgerald that the concepts of «professional identity», «professionalism», «professional socialization», «professional formation» are often used without a clear definition and put different meanings into them [6].

In this context, the opinion of a Dutch scientist, a representative of Leiden University Barnhoorn [7], who critically evaluated Cruess, Cruess & Steinert [3], is interesting. Barnhoorn [7] claims that in recent years, the concept of professional identity formation has gained such popularity in medical education that the concepts of professional behavior and professionalism have taken a back seat. At the same time, the researcher emphasizes, the concept of professional identity formation is «difficult to understand», its role is not fully clarified, assessment is difficult, or even «unattainably idealistic» [7]. In connection with this, the scientist expresses the opinion that the addition of the fifth stratum to Miller's pyramid, proposed by Cruess, Cruess & Steinert [3], remains a rather controversial and open question.

Instead, to describe the essence of professionalism, he proposed «onion model», in the center of which is the mission, and then from internal to external in a clear sequence the following layers follow: identity, beliefs, competences, behavior, environment [7]. Without dwelling in detail on all the layers of the «onion model», which Barnhoorn borrowed from Korthagen [8] and extrapolated to the professionalism of a doctor, we note that the mission is understood as the «level of spirituality» [8], which includes such exclusively personal, actually, ontological or existential questions about the awareness of one's own destiny in this world.

It is worth emphasizing that between Cruess, Cruess & Steinert [9] and Barnhoorn [7] on the pages of the journal «Academic Medicine» a fairly fierce discussion broke out regarding the «new top», let's call it the pyramids of Miller, Cruess, Cruess & Steinert [9] claim that their goal of making amendments to the pyramid was not to clarify the nature of professional identity formation, but to expand the scope of assessing professionalism and professional behavior, as well as the process of professional identity formation in the «art and science of medicine». After all, the formation of professional identity should become the goal of medical education, recognizing it as the basis of professionalism [3, 9].

In our opinion, the position of Voronenko and Mintser, who proposed the portfolio method as an organization process, form and technology of work, which allows continuous evaluation of the achievements of the subject of study, improving the process of medical education [5], is definitely balanced. We share the researchers' opinion that «the portfolio corresponds to the goals, tasks and ideology of practice-oriented education. As a cumulative portfolio assessment, it reflects sustainable and long-term educational outcomes, compensating for the effect of random success or failure in an exam, testing situation. In addition, it can serve as an alternative to the «cramming» provoked by this situation, which gives a short-term and superficial result [5]».

It is important that Voronenko and Mintser comprehensively approach the issue of evaluating the results of medical education and believe that Miller's pyramid, Bloom's taxonomy and the SMART standard [5], which at one time moved from management to other fields, serve as tools for structuring and standardizing information obtained from the portfolio

and is widely used to formulate and develop effective and measurable goals and objectives [10], in medical education in particular.

According to Al-Eraky & Marei [4], the basis of accurate assessment includes 5 orbits: «is», «knows», «shows», «does» and «does» (together). The inner orbit "is" includes an assessment of the personal qualities of candidate A. The outer orbit «do» (together) evaluates the dynamics of teamwork and the performance of students A, B and C. Indicator «Nodes» indicates personal qualities and cognitive base, which affect the effectiveness of team work when simulating conditions and when working in real practice conditions. Arrows indicate transorbital crossings to assess the prerequisites for a trusted professional activity.

The «Assessment orbits» model includes previously unaccounted elements in recognized in worldwide competency systems evaluation [4]. Al-Eraky & Marei [4] argue that the structure «Assessment Orbits» optimizes expert assessment and integrates various data sources (estimates, descriptions, checks and observations) according to selected qualities to support trustworthy decisions affecting learners both individually and across work in a group. Therefore, the assessment approach with the help of orbits offers a holistic, subjective and collective discourses modern assessment practice.

Conclusions.

We consider it appropriate to end our article with the words of George E. Miller: «… no single assessment method can provide all the data required for judgment of anything so complex as the delivery of professional services by a successful physician [1]».

Further research on issues related to the evaluation of the achievements of doctors and medical professionalism should be based on the following principles [11]: teachers should more clearly distinguish between the main content of the curriculum and everything else; learners at all levels should not be required to waste time on unproductive repetition of clinical activities after they have mastered the competencies appropriate to their level; at each level, it should be emphasized that competence means a minimum standard; the goal is for students to develop motivation and independent learning skills. Medical education must, through assessment, ensure that students achieve predetermined standards of competence in terms of knowledge and performance in core areas; assessment must go beyond what students know and can do to address a student's ability to identify gaps and next steps for learning; striving for excellence is a hallmark of professionalism in medicine, and expertise is also an ongoing commitment, not a quality.

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